

**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION III**

**Docket Nos:** 50-454; 50-455  
**License Nos:** NPF-37; NPF-66

**Report No:** 50-454/99018(DRS); 50-455/99018(DRS)

**Licensee:** Commonwealth Edison Company (ComEd)

**Facility:** Byron Generating Station, Units 1 and 2

**Location:** 4450 N. German Church Road  
Byron, IL 61010

**Dates:** November 15 - 19, 1999

**Inspector:** Donald E. Funk Jr., Emergency Preparedness Analyst

**Approved by:** Steven K. Orth, Acting Chief, Plant Support Branch  
Division of Reactor Safety

## **EXECUTIVE SUMMARY**

**Byron Generating Station  
NRC Inspection Report 50-454/99018(DRS); 50-455/990018(DRS)**

**This inspection reviewed the Emergency Preparedness (EP) program, an aspect of Plant Support. The inspector selectively evaluated the quality of EP program related audits and reviews, reviewed the effectiveness of management controls, verified the adequacy of emergency response facilities and equipment, reviewed EP training and qualification activities, and included follow-up on previous inspection findings. This was an announced inspection conducted by a regional inspector.**

- **Licensee personnel performed proper classifications and timely notifications during two actual activations of the Emergency Plan. (Section P1)**
- **Emergency response facilities, equipment, and supplies were very well maintained. All emergency equipment requested to be demonstrated was verified operable. (Section P2)**
- **The Nuclear Tracking System was an effective method of track and close EP issues. No problems were identified in the procedures or documents reviewed. (Section P3)**
- **Interviewed key emergency response personnel demonstrated competent knowledge of responsibilities and emergency procedures. Training records indicated that the program for tracking emergency responder qualifications was effective and training modules were properly reviewed and/or revised. (Section P5)**
- **Management support for the program appeared strong, as indicated by the successful implementation of a number of program upgrades. The station implemented a four team concept for emergency response, and conversion to the Community Alert Network. (Section P6)**
- **The licensee's Nuclear Oversight assessment and surveillances of the EP program were effective in satisfying the requirements of 10 Code of Federal Regulations 50.54(t). (Section P7)**

## Report Details

### IV. Plant Support

#### **P1 Conduct of Emergency Preparedness (EP) Activities**

##### **P1.1 Actual Emergency Plan Activations**

###### **a. Inspection Scope (82701)**

The inspector reviewed records and documentation packages regarding plant response for emergency plan activations that occurred since the last routine EP inspection. Also, the inspector reviewed the procedure for the EP staff's assessment of plant response for actual emergency plan activations.

###### **b. Observations and Findings**

An Unusual Event (UE) was declared at 9:15 a.m. on January 19, 1998, when a potentially radioactively contaminated injured individual was transported to an offsite medical facility. The shift manager appropriately declared the UE using emergency action level (EAL) HU7, "Transportation of a radioactively contaminated person to an offsite medical facility". Offsite notification to the State of Illinois via the Nuclear Accident Reporting System (NARS) was made at 9:20 a.m. which met the 15 minute requirement. The Emergency Notification System (ENS) call to the NRC was completed at 9:36 a.m. within the one hour requirement. The event was terminated at 10:15 a.m. on January 19, 1998, after the victim was cut out of his protective clothing, surveyed and found to be free of radioactive contamination. The NRC was notified of the termination via ENS at 10:32 a.m. All potential radioactive material was collected, contained and transported back to Byron Station for survey and disposition. The radiation emergency area at the hospital was surveyed and found to be free of radioactive contamination.

A second UE was declared at 4:13 a.m. on August 4, 1998, due to a loss of off-site electrical power. An early morning thunder storm resulted in a loss of off-site power to Unit 1. The shift manager correctly classified and declared the UE using EAL MU1, "Unplanned loss of all off-site power." The initiating condition was the unplanned loss of all off-site power to a unit's Essential Safety Function buses. All required notifications to the State of Illinois and the NRC were completed and in a timely manner. NARS notification to the State was made at 4:23 a.m. and the NRC was notified via ENS at 4:41 a.m. The UE was terminated at 1:01 p.m. on August 4, 1998, after off-site electrical power was restored and the diesel generators were shutdown. The NRC was notified via ENS at 1:42 p.m.

In accordance with Byron Station Procedure (BZP) 510-1, "Review of Actual Emergency Events". The licensee's EP staff conducted an assessment of plant personnel's emergency response for the UEs. Documents and records related to the events had been organized into a complete, detailed package. The EP group's summary report of

the event had been provided to corporate EP staff to complete the procedure. Documents reviewed indicated that the event classification and related notifications to offsite authorities and the NRC were made properly and in a timely manner.

c. Conclusions

The inspector concluded that the licensee appropriately implemented the emergency plan in declaring the Unusual Events. The emergency classifications were made correctly and offsite notifications were timely. The evaluation packages were detailed and provided good assessments of the plant's response to the actual events.

**P2 Status of EP Facilities, Equipment, and Resources**

**P2.1 Material Condition of Emergency Response Facilities (ERFs)**

a. Inspection Scope (82701)

The inspector evaluated the material condition of the control room, Technical Support Center (TSC), and the Operational Support Center (OSC). The OSC activation cart was inspected. Both field monitoring team vans and associated equipment (field monitoring kits) were also inspected. The licensee demonstrated the operability of several pieces of emergency response equipment, including radiological survey instruments, dose assessment and plant data computers, portable generators, and communications equipment. Records of periodic inventories and equipment tests were also reviewed.

b. Observations and Findings

Each facility was well maintained with sufficient supplies available and of ample size to accommodate responding personnel. No concerns were identified during the inspections of emergency supplies, procedures, forms, and equipment in these facilities. Dose assessment programs, and the Emergency Response Data System were demonstrated by the licensee, and verified operable. Numerous facility enhancements and upgrades were discussed and demonstrated. Computers and monitors in the TSC have been upgraded. One observed enhancement was the addition of a common "login" created for Generating Stations Emergency Plan (GSEP) use which reduces the amount of time needed to access point history information.

The GSEP Field Monitoring Team vans were in excellent material condition. Supplies were available in appropriate quantities. Procedures reviewed by the inspector were current and available. Instruments and equipment were verified functional and calibration dates were current. Environs and relocation center supplies had been moved to a location which provides for a more rapid response time.

Inventory records of emergency supplies and equipment for calendar year 1998 through the third quarter of 1999 were reviewed by the inspector. BZP 500-4, Revision 8, "Inventories of Emergency Supplies and Equipment", stated that these inventories should be conducted quarterly and following each use. Also reviewed were monthly communication tests and semiannual Health Physics drills. The inspectors determined

that the records and drills had been completed as required and within the appropriate time frames.

Four semi-annual off hours augmentation drills had been conducted since the last routine NRC inspection and were reported as successful. The call-out system was upgraded in February 1999. The new system decreased the time to complete notifications by letting responders answer questions from an automated message directly from their phones, without having to place an additional call to the station.

The prompt alert and notification siren operability report for 1998 thru October 1999 was reviewed by the inspector. Annual siren operability for 1998 was 99.1 percent with 98.1 percent reported for the lowest month's average. The 1999 annual operability average was 98.9 percent with 98.7 percent for the lowest month's average. The operability report automatically highlights siren operability percentages of less than 95% for management attention. Siren operability for Byron consistently exceeded the Federal Emergency Management Agency acceptability standard of 90 percent for a 12 month average.

c. Conclusions

Overall, the facilities, equipment, and supplies inspected were very well maintained. All emergency equipment requested to be demonstrated was found operable. The prompt alert and notification system sirens were well maintained.

**P3 EP Procedures and Documentation**

a. Inspection Scope (82701)

The inspector reviewed a selection of licensee emergency plan implementing procedures (EPIPs), emergency plan sections and revisions. Problem Identification Forms (PIFs) assigned to the Emergency Preparedness Group were reviewed. Also, the Public Information Brochure was reviewed.

b. Observations and Findings

The inspector reviewed changes to the Byron Emergency Plan, revisions 4N, 4P, 4Q, and 5, dated between August 1998 and May 1999. The changes for these revisions focused on replacing Northwestern Memorial Hospital with Loyola University Medical Center, change to the core exit thermocouple temperature, implementation of the single Emergency Operations Facility (EOF) concept, and EAL revisions. Inspection determined that the changes had not decreased the effectiveness of the Byron emergency plan.

Corporate Emergency Preparedness Implementing Procedure 1130-01, Revision 12, "Conduct of Emergency Response Organization Off Hours Augmentation Drills", was reviewed by the inspector. The procedure prescribes the requirements for the conduct of Off-Hours Augmentation Drills of the ERO. The objective of these drills is to

demonstrate the ability to activate the Stations TSC and the EOF Alert Staff in support of an emergency response at a ComEd nuclear facility.

Also reviewed was BZP 600-2 "Initiating Staff Augmentation", revision 7. This procedure outlines the steps necessary for management staff augmentation under emergency conditions outside of normal working hours. The procedure describes the implementation of the new Community Alert Network (CAN) system. CAN is a computer call out system which automatically begins calling personnel to fill appropriate emergency response organization (ERO) positions and then fax a report to the station indicating the names of personnel contacted to respond. The CAN system replaces the use of Station Augmentation Callers, which is now used as a contingency in the event of computer call out system failure. The CAN system, used during the four semi-annual off hours augmentation drills demonstrated a significant decrease in the time to complete the call out process. The procedure was concise and technically adequate.

The inspector evaluated the licensee's Corrective Action Program, as it pertains to EP. The Nuclear Tracking System is used by the EP group used to identify, track and close EP issues. This system was reviewed to determine the range of issues identified and the effectiveness of tracking and disposition of identified issues. The items reviewed were clearly identified by number and description; cognizant management and responsible persons due dates, and item status were also listed. Thirty two PIFs related to emergency planning were evaluated by the inspector. Documentation packages for selected PIFs were reviewed and found to be detailed and complete, with clearly trackable issues, status, dates, and closure documentation. A PIF had been properly initiated when issues were considered to exceed the threshold as specified in "Corrective Action Program Procedure", NSP-AP-4004, Revision 4.

The Byron Public Information brochure, distributed in May 1998 and August 1999, was also reviewed and was found to be in accordance with the ComEd GSEP.

c. Conclusions

The EIPs reviewed were clear and easy to use. Problems had been properly entered into the PIF system when considered to exceed the threshold for entrance into the system. Documentation reviewed was complete. The Public Information Brochure had recently been distributed.

P5 **Staff Training and Qualification in EP**

a. Inspection Scope (82701)

The inspector reviewed various aspects of the licensee's training program. The reviews included interviews with selected key ERO personnel (a TSC Station Director, a OSC Director, and a Radiation Protection Technician), review of training modules, computerized qualification records, and the Emergency Call List. The status of the respirator qualification program for emergency response was also reviewed.

b. Observations and Findings

The inspector compared the training module matrix, with the current GSEP Team Roster (BZP 600-A4) verifying that personnel listed were qualified. All ERO personnel reviewed were currently qualified for their emergency response positions. Training files contained the required documentation with minor exceptions. Several training modules were selected and read, with no problems identified. A review of training module revision dates indicated that training modules had been reviewed and/or revised in 1997 and 1998.

Interviews with three key emergency response personnel indicated appropriate knowledge of procedures and emergency responsibilities. Each individual was able to describe the response process in detail, and describe both their response functions and the applicable procedures they would utilize. During the interviews, personnel commented on the responsiveness of the EP group and the change to a performance-based tabletop drill training program.

Records indicated that drills and training were formally critiqued. The training critique forms indicated that the training had been of very good quality and the performance-based tabletop training and drills were considered effective by the participants.

Discussion indicated that there had been additional involvement by the EP coordinators in operator simulator training. This additional involvement was reported to have shown an improvement in operator classification and notification performance. The inspector observed a licensed operator requalification training class, in Severe Accident Management Guidelines, conducted by the EP trainer.

Review of respirator and Self Contained Breathing Apparatus (SCBA) qualification documentation provided the following information:

<b>Respirator/ SCBA Qualifications</b>				
<b>DEPARTMENT</b>	<b>NUMBER OF INDIVIDUALS</b>	<b>TRAINING/MEDICAL QUALIFIED</b>	<b>RESPIRATOR QUALIFIED</b>	<b>SCBA QUALIFIED</b>
Radiation Protection	36	36/14	11	11
Operations	125	124/120	109	104
Instrument Maintenance	51	51/49	28	0
Electrical Maintenance	55	55/46	27	7
Mechanical Maintenance	91	90/75	24	0
Chemistry	21	21/20	18	15

NRC Information Notice 98-20, "Problems with Emergency Preparedness Respiratory Protection Programs", was issued June 3, 1998. This information notice alerted

licensees to multiple generic weaknesses in respiratory protection programs supporting emergency preparedness. Respiratory protection qualifications included three parts; respiratory training, medical testing, and a mask fit. The numbers represented the current respiratory qualifications by department. The results of this review indicated that there appears to be sufficient respirator and SCBA qualified personnel to respond in the event of an emergency. Discussion indicated that licensee personnel were aware of the information notice and had evaluated its information.

c. Conclusions

Overall, EP training was effective. Competent knowledge of emergency responsibilities and procedures was demonstrated by key ERO personnel. Interviewed key emergency response personnel demonstrated their knowledge of responsibilities and emergency procedures. Training records indicated that the program for tracking emergency responder qualifications was effective and training modules were properly reviewed and/or revised.

P6 **EP Organization and Administration**

a. Inspection Scope (82701)

The inspector conducted discussions with the EP staff regarding the current EP organization and anticipated changes.

b. Observations and Findings

Significant changes have been made to the EP organization since the last inspection. While the Emergency Preparedness Coordinator (EPC) continued to report to the Radiation Protection Manager, the EP trainer position was changed from reporting to the Operations Training Group to reporting to the EPC. This change put the organizational structure in line with all other ComEd EP programs. Also, as part of a Corporate EP mandate for standardization, the station implemented a four team concept for emergency response on June 1, 1997. The change to the team concept resulted in a 30% increase in the ERO staffing. As a direct result of this increase in the ERO staff, the station implemented the CAN. Byron, in conjunction with Braidwood, were the first two ComEd plants to implement this new callout system.

Discussions with site and corporate EP staff indicated excellent management support. Upgrades and enhancements, plus the EPC's and Trainer's proactive approach to the program have produced significant improvement in the overall program. Management support was clearly a factor in the program's continued improvement over the last two years.

c. Conclusions

Discussions with the EPC, staff, and site personnel indicated appropriate management support to the program. Upgrades and enhancements, plus the EP staff's responsive approach, have continued improving trends in both the program and training.



**P7 Quality Assurance in EP Activities**

**a. Inspection Scope (82701)**

The inspector reviewed the Byron Station Nuclear Oversight (N.O.) Assessment of Emergency Preparedness, NOA-06-99-027, dated June 11, 1999. The audit objective evidence was reviewed and discussed with the lead auditor. Also reviewed were N.O. surveillance reports related to emergency preparedness, and the 1999 Byron EP Program Self-Assessment report. In addition, corporate documents such as the Corporate EP program Self-Assessment Summary, and Corporate EP Focus Area Assessments were reviewed.

**b. Observations and Findings**

The N.O. assessment audit, conducted May 3 - 28, 1999, was very detailed; and objective evidence and surveillance reports supported the audit findings. The audit resulted in one finding, regarding documentation retention limits for files placed in temporary storage and one observation, for a emergency plan change to more accurately define the selection and qualification of team participants due to the inception of the four team concept. The audit report and discussion with the lead auditor indicated that the overall implementation of the EP program had been effectively maintained. The audit identified that the interface with the state and local governments have been effective, which satisfied the requirements of 10 CFR 50.54(t).

The EP Program Self-Assessment was conducted September 27 - 29, 1999, with the assistance of corporate, LaSalle and Braidwood EP personnel, utilizing NRC inspection procedure 82701 as the base document for the review. This review concluded that the Byron EP program had been maintained at a "high level". The report identified no deficiencies and provided three recommendations. The self-assessment has proven to be a useful tool in identifying and obtaining corrective action on EP program issues at this site and others.

Discussion and document review indicated that the EP staff held periodic meetings with the Site Vice President to discuss the status of both the overall EP program and items resulting from previous audits and assessments. This indicated strong upper management attention to the EP program.

The inspector discussed N.O. and self-assessment findings and actions taken for the identified issues. Licensee evaluation of these items, documentation, tracking, corrective actions (where completed), and closure were effective and appropriate. The self-assessment identified that standardization between stations of the EP GSEP Training Exam Bank was lost when, for exam security reasons, the station was removed from the shared utility system. An Action Tracking item was assigned for Corporate EP to incorporate a standardized exam bank into the EP Master Procedure Project.

**c. Conclusions**

The licensee's 1999 N.O. EP program assessment and surveillances, and the 1999 EP Program Self-Assessment Report were effective and satisfied the requirements of 10 CFR 50.54(t). The audit and EP program self-assessment were of good scope and

depth. Identified issues were appropriately tracked and reviewed for resolution. Corporate efforts in assessing the overall program added value.

**P8 Miscellaneous EP Issues**

**P8.1 (Closed) Inspection Followup Item No. 50-454/98002-01; 50-455/98002-01:** During the 1998 routine EP inspection, it was identified that training module S-25, "ODCS Specialist" had not been updated to provide training on the most current dose calculation program. Corrective actions included opening a Nuclear Tracking System item, reviewing the S-25 training module and incorporating all dose assessment model information not covered in S-25 in a new lesson plan S-26, "Dose Assessment" which is now taught in conjunction with S-25. This item is closed.

**V. Management Meeting**

**X1 Exit Meeting Summary**

The inspector presented the inspection results to licensee management at the conclusion of the onsite inspection on November 19, 1999. The licensee acknowledged the findings presented. Overall, the EP program had been maintained in an effective state of operational readiness. Management support to the program was strong and interviewed key emergency response personnel demonstrated a good knowledge of responsibilities and emergency procedures. Nuclear Oversight assessment of the EP program was also very good.

The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

## PARTIAL LIST OF PERSONS CONTACTED

### Licensee

B. Adams, Regulatory Assurance Manager  
K. Bernardin, Radiation Protection Technician  
R. Colglazier, NRC Coordinator  
D. Drawbaugh, Emergency Preparedness Coordinator  
M. Jurmain, Maintenance Manager  
B. Kouba, Engineering Manager  
J. Kramer, Work Control Manager  
S. Kuczynski, Nuclear Oversight Manager  
W. Levis, Site Vice President  
R. Lopriore, Station Manager  
W. McNeill, Radiation Protection Manager  
S. Merrell, Assistant Emergency Preparedness Coordinator  
T. Oracki, Nuclear Oversight Assessor  
M. Snow, Operations Manager  
D. Stobaugh, Corporate Emergency Preparedness  
M. Vonk, Corporate Emergency Preparedness Manager

### NRC

E. Cobey, Senior Resident Inspector  
B. Kemker, Resident Inspector

### IDNS

C. Thompson, Resident Engineer

## INSPECTION PROCEDURES USED

IP 82701      Operational Status of the Emergency Preparedness Program  
IP 92904      Follow-up Plant Support

## ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

None

### Closed

50-454/455/98002-01      IFI      Updating training module S-25, "ODCS Specialist"

### Discussed

50-454/455/99015-01      IFI      Difficulty in dispatching "urgent" inplant team

## LIST OF ACRONYMS USED

BZP	Byron Station Procedure
CAN	Community Alert Network
CEPIP	Corporate Emergency Implementing Procedures
CFR	Code of Federal Regulations
ComEd	Commonwealth Edison Company
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
EAL	Emergency Action Level
ENS	Emergency Notification System
EOF	Emergency Operations Facility
EP	Emergency Preparedness
EPC	Emergency Preparedness Coordinator
EPIP	Emergency Implementing Procedures
ERF	Emergency Response Facilities
ERO	Emergency Response Organization
GSEP	Generating Stations Emergency Plan
IDNS	Illinois Department of Nuclear Safety
IFI	Inspection Follow-up Item
NARS	Nuclear Accident Reporting System
NPF	Nuclear Power Facility
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
NO	Nuclear Oversight
ODCS	Offsite Dose Calculation System
OSC	Operations Support Center
PIF	Problem Identification Form
PRR	Public Reading Room
RPT	Radiation Protection Technician
SCBA	Self Contained Breathing Apparatus
SRI	Senior Resident Inspector
TSC	Technical Support Center
UE	Unusual Event